



## Research Paper

# Comparative economics of cost and returns of organic tomato production with inorganic tomato production in Kolar district of Karnataka

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**ABSTRACT** : Study investigated the comparative economics of cost and returns of organic tomato production with inorganic tomato production in Kolar district of Karnataka. Findings revealed that cost of production of inorganic tomato was higher than organic tomato production. The gross return of organic tomato production was higher compared to inorganic tomato production. The return structure in tomato clearly revealed that the gross returns per ha was higher (Rs.311345.28) on organic farms compared to that of inorganic farms (Rs. 296887.50) with a positive net return on both the categories of the farms. The net return on organic farm was Rs.211588.78 and was Rs. 189426.64 on inorganic farms.

**KEY WORDS** : Cost, Input cost, Gross returns

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## INTRODUCTION :

India is a country is blessed with a unique gift of nature of diverse climate and distinct seasons. The vegetable crops have been well advocated in solving the problem of food security, since they are rich source of minerals, vitamins, fibre and contain fair amount of protein as well as carbohydrates. India ranks second in fruits and vegetables production in the world, after China. India produced 76.424 million metric tonnes of fruits and 156.33 million metric tonnes of vegetables (Source: National Horticulture Database, 2011-12). India under cultivation of fruits stood with an area of 6.704 million hectares while vegetables were cultivated on 8.99 million hectares (Source: National Horticulture Database, 2011-12). The vast production base offers India, tremendous

opportunities for export. During 2012-13, India exported fruits and vegetables worth Rs.5986.72 crore which comprised of fruits worth Rs. 2503.75 crores and vegetables worth Rs. 3482.97 crores (Source: National Horticulture Database, 2012).

Karnataka state is one of the leading vegetable producing state in the country with an area of 4,66,300 ha, as production of 9056.1 thousand metric tonnes and productivity of 19.4 metric tonnes per ha. (Source: National Horticulture database 2011-12). Out of which, tomato occupies a major area of 51.2 thousand hectare with a production of 1756.7 thousand metric tonnes, contributing 5.5 per cent production share of major vegetables in India (Source: National Horticulture database 2011-12).

Tomato (*Lycopersicon esculentum*) the species

originated in South American Andes and its use as a food originated in Mexico. The tomato is consumed in diverse ways including raw as an ingredient in many dishes sauces, salads and drinks. While it is botanically a fruit, it is considered as vegetable for culinary purposes. The fruit is rich in lycopene, which may have beneficial health effects.

Tomato belongs to family Solanaceae. It is a perennial in its native habitat, although often grown outdoors in temperate climates as an annual. According to *codex Alimentarius* (FAO/WHO), organic culture is holistic production management system which promotes and enhances agro ecosystem health, including biodiversity, biological cycles and soil biological activity. It emphasizes the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems.

## MATERIALS AND METHODS :

Multistage sampling design will be adopted in selection of Kolar district, tahsils, villages and vegetable growers'. At first stage, Kolar district is purposively selected on basis of maximum number of vegetable growing area. At the second stage Bangarpet, Mulbagilu and Malur Tahsils are selected on the basis of higher area under vegetable growers. At the third stage from

each selected tahsils, two villages are selected on the basis of higher area under vegetable growers. At the fourth stage, from each selected village 8 organic vegetable growers and 8 inorganic vegetable growers are selected. Thus, from six villages 96 growers was selected.

## RESULTS AND DATA ANALYSIS :

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

### Costs and returns from organic and inorganic tomato production :

Per hectare costs and returns from organic and inorganic tomato production were calculated as follows.

### Physical inputs used in organic and inorganic tomato production :

Per ha physical inputs used in organic and inorganic tomato production were estimated and presented in Table 1a and b. Use of hired human labour in organic growers were the highest as 91.76 man days followed by 88.49 man days in inorganic growers, respectively. Similar trend also observed in case of use of family human labour in organic growers were the highest as 9.61 man days followed by 8.75 man days in inorganic growers because,

Table 1(a): Per hectare physical inputs used and outputs of organic tomato production			(Unit/ha)
Sr. No.	Particular	Unit	Tomato
			Organic
Costs			
1.	Hired human labour	Man day	91.76
2.	Bullock labour	Pair day	3.43
3.	Machine labour	Hour	2.55
4.	Seedling	No	13219.69
5.	FYM	Q	113.2
6.	Green manure	kg	56.05
7.	Vermicompost	Bags	31.54
8.	Neem seed cake	kg	27.52
9.	Trichoderma	kg	2.37
10.	NSKE	lit	2.13
11.	Irrigation	m <sup>3</sup>	3265.52
12.	Family labour	Man day	9.61
Output			
13.	Yield	q	203.76

Table 1(b) : Per hectare physical inputs used and outputs of inorganic tomato production			(unit/ha)
Sr. No.	Particular	Unit	Tomato
			Inorganic
Costs			
1.	Hired human labour	Man day	88.49
2.	Bullock labour	Pair day	3.70
3.	Machine labour	Hour	2.74
4.	Seedling	No	13215.21
5.	FYM	q	44.25
6.	Fertilizer	kg	85.40:81.3:52.45
7.	Plant protection	lit	2.83
8.	Irrigation	m <sup>3</sup>	3041.3
9.	Family labour	Man day	8.75
	Out put		
10	Yield	q	217.5

in organic farms number of labours for FYM, vermicompost and Neem seed cake application were more as compare to inorganic tomato farms, that is why hired human labour as well as family human labour were more in organic farms as compare to inorganic farms. The bullock labour was utilized in organic grower 3.43 pair day followed by inorganic grower as 3.70 pair day. Use of machine labour in organic and inorganic tomato farms was 2.55 and 2.74 hour, respectively. The seed used in organic and inorganic tomato farms were 13,219.69 and 13,215.21, respectively. Use of FYM in organic and inorganic tomato farmer was 113.2 quintals and 44.25 quintals, respectively. It was observed that use of FYM was higher compared to inorganic tomato growers. In regards to nitrogen, phosphorus and potash use by the inorganic tomato growers was 85.40, 81.3, 52.45 kg, respectively. Organic growers use of organic fertilizers like vermicompost about 31.54 kg and biopesticides like neemseed cake, NSKE (Neem Seed Karnal Extract) and Trico derma about 27.52kg, 2.13 lit and 2.37kg, respectively. Use of plant protection by inorganic tomato growers was 2.83 lit. The irrigation required to both the farms is quite same which was about 3265.52 m<sup>3</sup> by organic growers' and 3041.30 m<sup>3</sup> inorganic growers.

#### Per hectare cost of cultivation of organic and inorganic tomato :

Per hectare item wise expenditure in organic and inorganic tomato production was estimated and presented in Table 2. The result revealed that total expenditure *i.e.* cost-C was Rs.107461.04 in inorganic tomato grower

followed by Rs. 99756.51 in organic grower. It was observed that total expenditure *i.e.* cost-‘C’ was more in case of inorganic tomato cultivation as compared to organic tomato cultivation because all the items of expenditure were higher in inorganic tomato cultivation as compared to organic tomato cultivation except expenditure on hired human labour, FYM and family labour were more in organic farms as compared to inorganic farms that's why the total expenditure *i.e.* cost-‘C’ was more in inorganic tomato cultivation as compared to organic tomato cultivation. Among all the individual items of expenditure, hired human labour was predominant. The proportionate expenditure on hired human labour was the highest (13.84 %) in organic tomato crop followed by (12.57%) in inorganic tomato crop. It was observed that proportionate expenditure on hired human labour was more in organic tomato cultivation as compared to inorganic tomato cultivation because in organic farms number of labours for FYM, vermicompost and Neem seed cake application were more as compare to inorganic tomato farms, that's why the proportionate expenditure on hired human as well as family human labour was more in organic tomato cultivation as compared to inorganic tomato cultivation. The proportionate of family human labour was highest in organic farms 2.23 per cent followed by 2.06 per cent in inorganic tomato farms. In the next order the item of rental value of land was found important one in which proportionate expenditure was 51.99 per cent in organic tomato grower and 46.70 per cent in inorganic tomato grower. It was clear that an item of irrigation was important item of expenditure. The proportionate share of irrigation was

3.68 per cent in organic tomato grower and 3.49 per cent in inorganic tomato grower. It was obvious that other items of expenditure showed minor proportions. Thus, on average expenditure on Cost-A was 44.23 per cent in organic tomato grower and 51.25 per cent in inorganic tomato grower. The proportionate expenditure on Cost-B was found 97.77 per cent in inorganic tomato grower and 99.40 per cent in inorganic tomato grower.

The return structure in tomato clearly revealed that the gross returns per ha was higher (Rs. 311345.28) on organic farms compared to that of inorganic farms (Rs. 296887.50) with a positive net return on both the categories of the farms. The net return on organic farm was Rs.211588.78 and was Rs. 189426.64 on inorganic farms. Though the yield levels on organic farms were

lower compared to inorganic farms, the net returns were higher because of the premium price received and lower cost of cultivation. The output: input ratio was also higher on organic farms (3.12) compared to inorganic farms (2.76).

### Conclusion :

The study has concluded that practice of organic cultivation of tomato was found to be profitable compared to inorganic farming of tomato. In case of cost and returns of production organic farming stands better than inorganic farming. Even though the yield of organic tomato was less compared to inorganic tomato cultivation, but they fetches higher price because of good quality and organic nature so it is advised to go for organic farming which is getting popular day by day.

**Table 2 : Per hectare cost of cultivation of organic and inorganic tomato**

Particulars	(Rs./ha)	
	Organic farms Cost	Inorganic farms Cost
Human labour	13808.5 (13.84)	13316.07 (12.57)
Bullock labour	1547.00 (1.55)	1578.00 (1.48)
Machine labour	1531.5 (1.53)	1606.5 (1.51)
Seedlings	7,986.25 (8.00)	8000.75 (7.55)
FYM	11403.5 (11.43)	4442.00 (4.19)
Green manuring plants	553.25 (0.5)	-
Vermicompost	315.75 (0.31)	-
Bio pesticide	948.29 (0.9)	-
Chemical fertilizer	-	13328.50 (12.58)
Plant protection chemicals	-	4255.60 (4.01)
Irrigation	3675.54 (3.68)	3698.12 (3.49)
Land revenue	22.25 (0.02)	22.23 (0.02)
Interest on working capital	1,897.23 (1.90)	1994.12 (1.88)
Depreciation on capital assets	437.2 (0.43)	489.14 (0.46)
Cost A (Σ 1to14)	44126.26 (44.23)	54285.03 (51.25)
Rental value of land	51868.63 (51.99)	49459.02 (46.70)
Interest on fixed capital	1543.12 (1.54)	1529.34 (1.44)
Cost B (Σ 15to17)	97538.01 (97.77)	105273.39 (97.96)
Family human labour	2218.5 (2.23)	2187.65 (2.03)
Cost C (Σ 18to19)	99756.51	107461.04
Returns		
Main produce (q)	203.76	217.5
Gross returns	3,11,345.28	2,96,887.50
Net returns	211588.78	189426.64
Output :input	3.12	2.76

(Figure in parentheses indicate percentage to total production)

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